REMARKS/ARGUMENTS

Reconsideration and continued examination of the above-identified application are respectfully requested.

The amendment to the claims further defines what the applicants regard as the invention. Full support for the amendment can be found throughout the present application, for instance, at pages 4, 5, and 8. The amendment to claim 1 is made to further clarify a "fuel-rich process" which was previously considered by the Examiner and to use more appropriate process claim language. Therefore, no new questions of patentability should arise nor does the amendment necessitate any further searching on the part of the Examiner, since the Examiner has essentially considered similar subject matter in previously amended claim 1. The amendment also places the application in condition for allowance. At a minimum, the amendment places the application in a better condition for appeal. Accordingly, no questions of new matter should arise and entry of the amendment is respectfully requested.

Claims 1-14 are pending in the application. Claims 9-14 have been withdrawn as the result of an earlier restriction requirement.

At page 2 of the Office Action, the Examiner rejects claims 1-8 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. More specifically, the Examiner states that in claim 1, it is unclear which carbon black the term "said carbon black" is referencing. For the following reasons, this rejection is respectfully traversed.

Claim 1 of the present application recites that a carbon black is produced by a fuel-rich process. Therefore, as indicated in claim 1, the recited carbon black relates to the produced carbon

black. Accordingly, this rejection should be withdrawn.

At page 2 of the Office Action, the Examiner maintains the rejection of claims 1 and 2 under 35 U.S.C. §103(a) as being unpatentable over Rothbuhr et al. (U.S. Patent No. 4,636,375). The Examiner provides the same reasons for rejecting claims 1 and 2 over Rothbuhr et al. as in the previous Office Action dated October 16, 2003. At page 4 of the Office Action, the Examiner states that claim 1 does not recite that the present process is a fuel-rich process. According to the Examiner, a product is not limited by the process by which it is made. The Examiner states that active, positive, and direct claim language should be used to clarify the claims and to properly limit the claims to what is being argued. Additionally, the Examiner states that using 60-70% air is considered a fuel-rich process and that the references teach or suggest fuel-rich processes. For the following reasons, this rejection is respectfully traversed.

Claim 1 of the present application recites a furnace carbon black-producing process wherein off-gas from a carbon black furnace is dewatered and heated, following substantial removal of carbon black therefrom, and fed as a combustion gas feed stream to a burner portion of the same or a different carbon black furnace, wherein the combustion gas feed stream does not completely combust, thereby producing a carbon black by a fuel-rich process.

With respect to the Examiner's conclusion that the added language does not recite that the present process is a fuel-rich process, claim 1 now recites, in part, wherein the combustion gas feed stream does not completely combust, thereby a carbon black is produced by a fuel-rich process. One skilled in the art, by reading claim 1 of the present application, would appreciate that when the combustion gas feed stream is not completely combusted, the process is a fuel-rich process.

With respect to the Examiner's statement that using 60-70 percent air is considered a fuel-rich process, the Examiner is misinterpreting Rothbuhr et al. Rothbuhr et al., at col. 1, lines 56-58, states that "[a] 60-70% turnover of the air-oxygen with the fuel gas is a value quite customary in practice." One skilled in the art, by reading Rothbuhr et al., at col. 1, lines 56-58, would clearly understand that a "60-70% turnover of the air-oxygen" indicates that only 60-70% of the amount of oxygen present is used to burn all of the fuel. Thus, there is extra or excess oxygen present. Clearly, the process is a fuel-lean process.

Rothbuhr et al. relates to a fuel-lean process, whereas the claimed invention relates to a fuel-rich process. According to the present application, and more specifically at pages 4 and 8, a fuel-rich environment exists when the amount of oxidant gas feed stream, which is combined with the combustion gas feed stream, is less than eighty percent (80%) of the amount required to completely combust the combustible components of the combustion gas feed stream. In other words, the oxidant gas stream provides oxygen in an amount less than eighty percent (80%) of stoichiometric oxygen. Furthermore, it is a common practice to define the stoichiometric ratio of oxygen and fuel when dealing with fuel-rich processes. In fact, when the stoichiometric ratio of oxygen and fuel is not defined and the document does not explicitly state that the process is a fuel-rich process, it is generally construed by one skilled in the art that the process is a fuel-lean process.

Rothbuhr et al., at column 1, lines 45-48, states that "[t]he fuel gas required for energy production (or some other fuel) is mostly employed in such volumes, related to the volume of oxygen introduced with the combustion air, that it is present in deficiency." One skilled in the art, by reading Rothbuhr et al., at col. 1, lines 45-48, would clearly understand that it is the fuel gas that is present in deficiency. Thus, the process described at col. 1, lines 45-48, is a fuel-lean process,

which teaches away from the claimed invention.

Rothbuhr et al., at col. 1, lines 49-52, also states that "...it is one of the principles of the furnace black process that the volume of oxygen is used in deficiency relative to the fuel and carbon black raw material volume." (Emphasis added) In other words, the volume of oxygen is less than the combined volume of fuel and carbon black raw material. If the volume of oxygen is equal to or more than the combined volume of fuel and carbon black raw material, the oxygen would completely burn the carbon black raw material and the process would not result in production of a carbon black. The statement at col. 1, lines 49-52, does not indicate that the volume of oxygen is less than the volume of fuel by itself. In fact, one skilled in the art, by reading Rothbuhr et al., at col. 1, lines 49-52, in view of Rothbuhr et al., at col. 1, lines 45-48, would conclude that the amount of oxygen is more than the amount of fuel, but not more than the combined amount of fuel and carbon black raw material.

In addition, Rothbuhr et al., at col. 1, lines 53-56, states that "...whenever as little as possible air-oxygen is to come into contact with the carbon black raw material and is to burn the latter, as high volumes as possible as fuel gas are used." The statement at col. 1, lines 52-56, on its face, seems to indicate a trend to run a process wherein the amount of fuel reaches or approaches stoichiometric. However, although col. 1, lines 52-56, indicates an increase in the amount of fuel, according to Rothbuhr et al., at col. 1, lines 58-62, the amount of fuel cannot be greater than the amount of oxygen because such a process would damage the liner of the reactor. See Rothbuhr et al., wherein Rothbuhr et al. teaches away from having a fuel-rich process by stating, at col. 1, lines 58-62, that a high amount of fuel leads to higher temperature loads, which can destroy the inner liner of the reactor. For the reasons set forth above, Rothbuhr et al. at col. 1, lines 45-63, clearly

describes a fuel-lean process.

Moreover, Rothbuhr et al., at cols. 7 and 8, further emphasizes the production of carbon black using a fuel-lean process by stating that the process includes an air volume constant of 27 Nm^3/h and a natural gas constant of 1.9 Nm^3/h. One skilled in the art would recognize that an air volume constant of 27 Nm^3/h and a natural gas constant of 1.9 Nm^3/h relate to a fuel-lean process.

Since the claimed invention relates to a process using a fuel-rich process and Rothbuhr et al. uses a fuel lean process, Rothbuhr et al. does not teach or suggest the claimed invention. Accordingly, the rejection under 35 U.S.C. §103(a) over Rothbuhr et al. should be withdrawn.

At page 2 of the Office Action, the Examiner maintains the rejection of claims 1 and 2 under 35 U.S.C. §103(a) as being unpatentable over Stokes (U.S. Patent No. 2,672,402) alone or in view of Rothbuhr et al. The Examiner provides the same reasons for rejecting claims 1 and 2 over Stokes alone or in view of Rothbuhr et al. as in the previous Office Action dated October 16, 2003. For the following reasons, this rejection is respectfully traversed.

The arguments set forth above with respect to Rothbuhr et al. apply equally here. In summary, Rothbuhr et al. teaches away from the claimed invention by describing a fuel-lean process. As the Examiner appreciates, Stokes does not teach or suggest dewatering and heating the off-gas from a carbon black furnace prior to "recycling" the off-gas. The advantages of preheating are discussed, for instance, at pages 7-9 of the present application. In accordance with the claimed invention, preheating the off-gas generates higher yields of carbon black at a given surface area and better production economics. Furthermore, according to Stokes, the process of Stokes results in an increase in the yield of carbon black and in a production of a valuable gaseous product. Thus, one skilled in the art by reading Stokes, which asserts that its process increases the yield of carbon

black, would not be motivated to look to other references and would not look to Rothbuhr et al. since the process of Stokes already increases the yield of carbon black. Only improper hindsight can explain the combining of Rothbuhr et al. with Stokes.

Furthermore, even if one skilled in the art could refer to such an old document as Stokes when attempting to produce an improved process, Stokes simply does not teach or suggest the use of a heating step during the recycling procedure. Further, the amount of oxygen is different from the process of Rothbuhr et al. compared to Stokes The references would be difficult to combine for this reason as well.

With respect to the Examiner's argument that Stokes, at col. 3, lines 50-55, describes a fuel-rich mode, the applicants believe that the Examiner is misinterpreting Stokes. According to Stokes, at col. 3, lines 50-55, "[o]xygen is supplied in a ratio of about two volumes of make material to about one volume of oxygen." This statement means that the process of Stokes includes about two times as much carbon black making raw material as oxygen. At best, one could argue that the term "make material" includes both fuel and carbon black make material. However, it would be clear to one skilled in the art that "make material" is not fuel by itself. Stokes therefore does not teach or suggest that the amount of fuel is greater than the amount of oxygen. Accordingly, the rejection under 35 U.S.C. §103(a) over Stokes alone or in view of Rothbuhr et al. should be withdrawn.

At page 3 of the Office Action, the Examiner rejects claims 3 and 8 under 35 U.S.C. §103(a) as being unpatentable over Stokes alone or with Rothbuhr et al., and further in view of Sircar (U.S. Patent No. 5,240,472) and Doshi (U.S. Patent No. 4,690,695). The Examiner provides the same reasons for rejecting claims 3 and 8 over Stokes alone or with Rothbuhr et al. and further in view of Sircar and Doshi as in the previous Office Action dated October 16, 2003.

At page 4 of the Office Action, the Examiner states that Sircar is germane to the rejection because it describes the claimed features. The Examiner then states that if the applicants claim a PSA process, then any PSA reference is analogous. The Examiner further states that the applicants' argument overlooked the fact that the references are being relied upon for narrow teachings of the claimed features. For the following reasons, this rejection is respectfully traversed.

The arguments set forth above with respect to Stokes and Rothbuhr et al. apply equally here. According to Stokes, the tail gas contains large quantities of CO and H_2, contaminated only with relatively small amounts of CO_2, water vapor, and decomposed hydrocarbon, each of which can be removed from the CO and H_2 by convenient and inexpensive steps. Sircar relates to the removal of water from an air stream wherein water and CO_2 are removed in a pretreatment system and then the air stream is cryogenically fractionated into its components. Sircar does not at all relate to carbon black processes and therefore is non-analogous art.

With respect to the Examiner's comment that if the applicants claim a PSA process then any PSA reference is considered analogous, the applicants respectfully disagree. Sircar, at col. 5, lines 52-56, states that residual water and carbon dioxide can be removed from a nitrogen-containing gas stream, such as air, by methods such as PSA. Given that Sircar specifically recites that PSA is used to remove residual water in a nitrogen-containing gas and, according to Stokes, its tail-gas does not include nitrogen, one skilled in the art would not be motivated to combine the teachings of Sircar with Stokes to remove the water vapor of Stokes by PSA. Therefore, Sircar and Stokes are non-analogous art. The Examiner has not provided any proper motivation why one skilled in the art would look to Sircar for PSA. Certainly, none of the primary references have provided any motivation and Sircar does not relate to carbon black.

With respect to Doshi, this patent relates to a permeable membrane for initial bulk gas separations which makes use of a pressure swing adsorption system. From a reading of Doshi, there is no teaching or suggestion of using this system in the manufacturing of carbon black. Accordingly, Doshi is also non-analogous art with respect to the claimed invention and, furthermore, one skilled in the art would not look to Doshi and combine it with the production of carbon black patents relied upon by the Examiner, including Stokes and/or Rothbuhr et al. The only motivation that one would have for applying this technology to carbon black would be through the use of hindsight or an obvious to try standard, both of which are improper for purposes of determining patentability.

Further, claim 8 is dependent on claim 1; and therefore, the arguments set forth above with respect to the patentability of claim 1 apply equally here. Accordingly, the rejection under 35 U.S.C. §103(a) over Stokes alone or with Rothbuhr et al. and further in view of Sircar and Doshi should be withdrawn.

At page 3 of the Office Action, the Examiner maintains the rejection of claims 4-7 under 35 U.S.C. §103(a) as being unpatentable over Stokes alone or in view of Rothbuhr et al. and further in view of Lynum et al. (U.S. Patent No. 5,527,518). The Examiner provides the same reasons for rejecting claims 4-7 over Stokes alone or in view of Rothbuhr et al. and further in view of Lynum et al. as in the previous Office Action dated October 16, 2003. For the following reasons, this rejection is respectfully traversed.

The arguments set forth above with respect to Stokes alone or in view of Rothbuhr et al. apply equally here. Lynum et al. relates to passing a preheated feedstock of methane and/or natural gas through a plasma torch to cause a pyrolytic decomposition of the feedstock. Thus, Lynum et al.

does not teach or suggest recycling the off-gas, and further plasma heating of the off-gas which has been preheated to a certain degree via a suitable heat exchanger. According to Lynum et al., a plasma torch increases the temperature of the feedstock to over 1600° C, which is the decomposition temperature for the raw material. This temperature is too high to be used for preheating the feedstock. Lynum et al. does not teach that the gases transported in a return pipe to the torch are preheated. Thus, one skilled in the art, by reading Lynum et al., would not use a plasma torch to preheat a recycled feedstock of Stokes, or to heat an oxidant gas feed stream, to preheat the combustion gases produced in a burner portion of the same or to preheat the combustion gases produced in a burner portion of a different carbon black furnace. Instead, one skilled in the art, by reading Lynum et al. in view of Stokes, would conclude that a plasma torch is only used to decompose the feedstock instead of preheating the feedstock.

Accordingly, one skilled in the art, by reading Stokes alone or in view of Rothbuhr et al. and in view of Lynum et al., would not select the elements from the three references for combination in a manner claimed by the applicants. The only way this rejection can be made is by the improper use of hindsight, by the improper use of an obvious to try standard, and/or by the manipulation of the references in a manner not taught or suggested by the references. Accordingly, this rejection should be withdrawn.

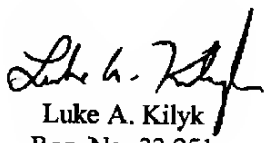
The Examiner is respectfully requested to contact the undersigned by telephone should there be any remaining questions as to the patentability of the pending claims.

CONCLUSION

In view of the foregoing remarks, the applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



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